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CHINA'S SMALL MUD BIN SOLVES BIG STORAGE PROBLEM

by TIEN SHANG

of China Features

The introduction of a very simple storage bin built almost entirely of straw and mud has helped solve grain storage problems in China.

Dubbed the "round mud granary," this bin, which resembles a tower silo, is appearing in increasing numbers throughout the countryside. It is modelled on the tiny traditional mud bin constructed by villagers in Northeast China to store household reserves, and the largest has a capacity of several hundred tons.

Being a developing country, China cannot at the present time produce sufficient quantities of steel and cement to erect grain elevators. The mud bin helps solve this problem.

A meeting of grain depot workers was held in Peking in 1969 to popularize the round mud granaries. Since then, they have been built in all parts of the country, in line with the nation's "store-grain-everywhere" policy.

At the Tatushe grain depot, some 30 kilometres to the east of Peking, there are 80 round mud graneries, each holding 200 tons. Picturesquely topped with domed thatch roofs, the bins are eight metres high and as many metres in diameter. The walls, 25 cms thick, are completely built of straw and mud. The inner walls are lined with a thin layer of lime. The bins stand on circular, one-metre high rock and cement foundations which protect the stored grain from dampness and rodents.

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Wheat, rice, maize and beans are stored in bulk, and drawn out by gravity through tapholes located at the bottom of the bin. Portable conveyor equipment is used in filling and emptying.

When the bin is filled, the grain is covered with kraft paper and reed matting over which a layer of dry sand, 20 cms thick, is spread to keep out insects.

On the wall of each storage bin are a few tiny holes to take grain samples and to check the temperature.

"Our round mud bins", said a man in charge of the depot, "keep grain as well as any other storehouse. We have suffered no losses from insects, rats or mold since these bins were built in 1975." The loss in the depot comes to only 0.2 percent annually, and this is incurred during transit, he added. Grain dried to a moisture content below 13 percent can keep well for one to three years in these mud-and-straw granaries.

When exposed to the sun, the mud bins do not get as hot as those constructed of reinforced concrete. This lengthens effective storage time.

The mud bins are also notably strong. One erected more than 30 years ago in Mingshui county, Heilungkiang province, northeast China, is still serviceable today. When a violent earthquake struck the Tangshan area in North China in 1976, all the brick storehouses at a depot in the epicenter collapsed. Scores of round mud graneries survived the impact and remained upright.

One big advantage of the mud granaries is that they can be constructed with rice and millet straw, reeds or other tall grasses that are readily available in the countryside. Using straw and clay obtained around their village, and lime and rock burnt and quarried locally, members of the Mulin production brigade in Shunyi county on Peking's outskirts, for example, have erected a 10-ton capacity mud bin at a cost of only a few yuan (one yuan is about $0.60 US) for the cement used in the foundation.

Among the builders at the Tatushe depot were young people and school children doing a stint of voluntary labour. Their job was mainly to mix rice straw with mud and twist it into sheaves, each about 5 cm thick. These sheaves were then passed to masons who used them warp and weft and piled them up to form the circular wall of the bin.

The only tool the masons employed was a small iron implement which is as broad as the wall is thick to press the sheaves together to form a wall of uniform thickness.

During construction, when the straw-and-mud wall reaches a height of about 20 cm, it should be left to dry for a day or two, otherwise it will collapse under its own weight. Then it can be raised another 20 cm. For this reason, the practice is to erect several bins at a time: when work stops on one, it begins on another.

As the mud walls will be damaged by rain if left uncovered, Chinese peasants build their storage bins only in dry seasons.

When they are completed, the mud bins are roofed over with wooden boards, reeds or other waterproof materials and fixed with windows and hatches made of wood. In the southern parts of China where the precipitation is high during the monsoon season, the mud bins are encased with sorghum stalks or reeds plastered with lime. This gives adequate protection against rain, moisture, and heat.

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Round mud granaries, like these at a depot east of Peking, are helping to solve China's grain storage problem.

PHOTO: China Features